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are unequally strong and variously distributed with each. Genius, moreover, in the most elevated sense that it can be understood, is an exception among artists themselves, and even in genius, the meeting together of several happy gifts is exceptional. But it is willingly attributed to all those, whatever may be their art, whose works are able to touch the human cords that vibrate the most profoundly. Painters appear to us to compose a well-marked type among such. The reader has seen the characters of it brought together and discussed in this volume: he will preserve its living image after having closed the book." This in itself furnishes a sufficient recommendation for the perusal of M. Arréat's work, which apart from its psychological value, is a perfect mine of gracefully written information about painters and their peculiarities. Ω.

PHYSIOLOGIE DE L'ART. By *Georges Hirth.* Traduit de l'Allemand et précédé d'une Introduction par *Lucien Arréat.* Paris: Félix Alcan. 1892. Pp. 247.

We have now occasion to review a work on a subject much akin to the preceding—a work which has been translated from the German by the same author, M. Lucien Arréat, and supplied by him with a very interesting introduction. This Introduction is in reality a résumé by M. Arréat of a series of studies by M. Hirth on physiological optics. These studies are of great importance and are classed by the French editor under the three heads of Form, Illumination, and Movement. The first of these comprises the subjects of monocular and binocular vision, the depth and the bilateral enlargement of the visual field, perspective and identical points. Under the head of illumination the effect of the "double bath of light" through the two eyes, the "luminous equation," and the problems connected with optical measurement are considered.

We have not space to exhibit fully the author's ideas on these topics, but we can state what are regarded by M. Arréat as the two principle propositions which give to them their life and unity. One of these propositions is, that the first function of our dioptric apparatus consists in furnishing to our central visual organ, which M. Hirth terms the *internal eye*, material which the latter has to interpret. The other is that it is necessary to get rid of mathematical concepts, which are much too rigid to be applied to the delicate problems of vision, and to fall back on visual sensation such as it is. These propositions imply, moreover, the admission of an electro chemical process, "without which the properties of the eye and the marvels of vision remain inexplicable." This last conclusion has a bearing on the nature of memory, or the recollection of the impressions received by the nerves and brain after the original excitation has disappeared. Thus, M. Hirth suggests that when we know the physiological procedure in the impregnation of cerebral molecules, or in their electric charging, memory will be found to be only the prolongation of the duration of consecutive images.

The inquiries of M. Hirth throw great light on the difference between monocular and binocular vision, for information as to which and other details of his optical theory we must refer our readers to M. Arréat's Introduction. This concludes with a consideration of the perception of light-movement, the reproduction of which is said to require a special exercise of attention, direct or indirect. Here we have the third degree of attention, according to the views of M. Hirth, who regards it as artistic apperception, having its end in itself and capable of being reproduced through co-ordination of the movements perceived.

A considerable portion of the second and principal part of this work is occupied with the psychology of attention and of the related subject memory. The latter is defined by M. Hirth as "a sum of states of perception gradually accumulated by the various organs of sense," and it is thus not a special faculty of the mind. The mental condition which results from the action of memory is what is known as *disposition*. This disposition is transmitted from one generation to another, and becomes innate as the memory of the species. But it is intimately connected with the nervous system, and with the brain regarded as the electric storehouse of memories. It is in accordance with these ideas that the author explains the transmission of hereditary qualities, the problem which is at present engaging so much attention. The innate organisation is a conservation of nervous quality or temperaments associated with the anatomical disposition of the nervous system, and a certain condition of electrical tension among the cerebral molecules. The transmission of ancestral qualities depends, however, on the vigor and good condition of the germ, and as the organisation received from our earliest ancestors is the most persistent, the primitive "disposition" will subsist even without exercise whilst nutrition and circulation assure the continuance of molecular growth.

It is with the visual memory that the author is chiefly concerned, and he affirms that the optical phenomena referred to in the Introduction compel us to admit the existence in the brain of a central organ, which he terms the internal eye. In order to determine the position of this organ, which is the real seat of visual perception, to the exclusion of the retina, whose function has been overestimated, M. Hirth considers the anatomical and physiological aspects of the question, and he accepts the conclusion arrived at by H. Munk in his *Functions de l'écorce cerebrale*, that perception is the function of a particular portion of the cerebral cortex. There thus exist two visual centres or "internal eyes," one in each convexity of the occipital lobes, as shown in Plate V. of the present work. Munk's researches would seem to prove, moreover, that not only is there a general localisation of visual memories, but that each memory is fixed in a precise and determined place. The centres of memory and the centres of perception, which M. Hirth supposes to be simply a phase of memory, are the same. Moreover attention is connected with perception, but it is an imperfect state of memory. Attention requires the expenditure of force, while perfect memory acts spontaneously; and it is only in this form, "exempt from fatigue, that it becomes the passive servant of our instincts and sensations, of our voluntary acts, of our labor." Memory when perfect is automatic, and according to the theory of M. Hirth, who does not accept M. Ribot's monoideistic theory, it is accompanied with automatic attention, which is the result of a gradual transformation of "energetic" attention, and attains in a normal adult an incredible development both in quantity and quality. This *latent* attention is required by the existence of latent memory, which is properly spoken of by M. Hirth as an organic attribute of the highest moment, seeing that it forms the basis of all individual acquirements. It would seem to answer, however, to what is often spoken of as the subconsciousness.

We can understand how this doctrine of latent memory and latent attention can have an important bearing on the question of the origin of the artistic sense, especially as each brain centre may be supposed to have its own memory, and each fundamental memory its special temperament. The activity of such centres is due in great measure, as pointed out by M. Ribot, to nutrition and blood-circulation but M. Hirth adds a third factor, electrical tension. According to his theory, cerebral activity rests ultimately on electricity, the invisible currents of which, maintaining the whole system in a state of tension, are "the inferior currents of the latent memory," the brain centres being electrical accumulators. This idea, which the author applies also to the explanation of colored visual memories, is open to strong critical objections. In relation to the particular subject of art, the author shows that the hereditary transmission of talent depends on the active maintenance of the special temperament of certain fundamental memories and their associations, and talent itself therefore depends on the existence of such a temperament. We here come in contact with M. Lombroso's theory of the physiological degeneracy of genius, which M. Hirth opposes with much force, and we think on the whole with success. This discussion occupies the last chapter of a work that, as our readers will be able to judge from the glance given here at some of its leading topics, has a scientific value quite apart from the special subject of art which it is intended to illustrate, and which it goes far towards establishing on a physiological basis. Ω.

LES ALTÉRATIONS DE LA PERSONNALITÉ. By *Alfred Binet.* Paris: Félix Alcan 1892. Pp. 323. Price, 6 fr.

In the present work, the accomplished director of the laboratory of physiological psychology at the Sorbonne has brought together and systematised all the most reliable phenomena bearing on one of the most curious subjects of inquiry now engaging attention. Notwithstanding the disagreement between different experimenters as to particular facts, all have arrived at the conclusion that, under special conditions, the normal unity of consciousness may be broken, and that then there is the production of several distinct consciousnesses "each of which can have its perceptions, its memory, and even its moral character." No one is better fitted than M. Binet to perform the eclectic work he has undertaken of discussing the recent researches on the alteration of personality, without regard to the special views of particular schools.